

Santa Rita Experimental Range: Buffelgrass Control in PMC Enclosure



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2006 Activities

Since near the time the Tucson Plant Materials Center was established in the 1930s, a 13 ac enclosure on the Santa Rita Experimental Range (SRER) was provided to the Tucson PMC to test plant materials from the Center. The site is conveniently located, near Sahuarita, which is about a 45 minute drive south of the Center.

The SRER is a research facility established in 1903 to study the effects of grazing and livestock production on semidesert rangelands, once administered and managed by the US Forest Service, and currently by the University of Arizona's College of Agriculture. A good working relationship was established between the organizations. Until the mid-80s this plot was used year after year with a variety of different materials, disked, and used again in following years. Use of the plot by the PMC diminished following that period, a time which is characterized by active interest in "improvement of the range" – be it native or exotic – whatever would establish in these arid grasslands and provide good nutrition to wildlife and cattle.

In 1985 a plot of Buffelgrass (*Cenchrus ciliaris*), an exotic grass from South Africa, was planted in the center of the enclosure as one of 20 accessions of plant materials to be tested. In the following years, the Buffelgrass plot, once 8 ft wide by 205 ft long, began to spread. By 2001 it was reported, "Buffelgrass has invaded and taken over most of the center of the site." (Bruce Munda, SRER log book, 1/31/2001)

In successive years a monoculture has covered over half the enclosure as well as beyond the fence line. Buffelgrass has not only spread at this site, but in recent years has noticeably spread across southern Arizona, particularly along roadsides and southern facing hillsides. The Tucson PMC has changed its purpose from "improvement" of rangelands to "restoration" of rangelands, with exclusive use of native, preferably local or regional, materials.

In August 2006, the University of Arizona and the Tucson PMC agreed it was time to contain the buffelgrass infestation in the test plot. Three days of spraying over a period of a month, using a variety of equipment and multiple individuals, addressed the infestation. On the first day, the tractor was used for spraying. The tractor with an 8 ft boom required a driver and two additional people for directing the tractor movement to assure good coverage. 130 gallons of 5% Roundup solution was used to cover approximately 7 ac, the area of densest infestation. The infestation was located with GPS, which was centered



Jace sprays the infestation of Buffelgrass in an enclosure on the Santa Rita Experimental Range

in the enclosure, but also spread to nearby washes and roads. For the following two days of work only ATV and backpacks were used to spray the satellite locations.

The first two visits occurred during the monsoon period, when the plants were growing vigorously. By the third visit a month later, the Buffelgrass was yellowing, entering dormancy. The first two days of spraying killed the Buffelgrass but we were not convinced about the third. The Tucson PMC has agreed to return for 2 more years, as budget and personnel permits, to remove the Buffelgrass infestation altogether.

Due to the success of the buffelgrass kill in the 13 ac plot, the University of Arizona has set up a committee to survey and eradicate all Buffelgrass from the roads of the SRER. Technical assistance on spraying and planning was provided by the PMC. The PMC created a document to help guide the UA team efforts to demonstrate the cost efficiency using different types of equipment (see Table 1).



Ramona rejoices at her success two weeks after spraying Buffegrass (June 2006)

Table 1. Tucson PMC Recommendations to University of Arizona for Buffelgrass control

Implements	Tractor work		ATV or Backpack	
	Need per day	\$ for 7 ac	Need per day	\$ for 1.5 ac
Tractor	150	150		
Tractor sprayer	50	50		
Backpack			50	
ATV w/sprayer			50	50
Roundup (5%)	12gal/200gal H2O x \$45/gal ¹	540	\$45/gal x 3gal/100gal H2O ³	135
Labor	3 people x 8hr x \$30/hr ²	720	2 people x \$30/hr x 10 hr	600
Dye	0.25gal x \$32/gal	8	3 "glug"s/100gal H2O	2
Surfactant or soap	3gal Surf/200gal H2O x \$20/gal	60	1.5gal/100gal H2O	30
Gas/mileage	\$1/mi x 90mi	90	\$0.50/mi x 90mi	45
		Total:		Total:
		1618		862
\$ Per ac:		231*		574*
\$ For 1000 ac on SRER:		231,000		574,000

***Suggested lower cost options:**

Tractor work:

¹ Either: (A) Decrease Roundup rate to 3-4% or (B) increase acreage sprayed per volume solution by using finer spray nozzles

(A) At 4%: \$45 x 9.6gal = \$432 for Roundup per 7ac (total **\$215/ac**)

(B) Increase acreage sprayed from 7 to 10ac (Total **\$155/ac**)

² Use implements (ie. Foam) rather than the two assistants- \$30/hr x 8hr x 1pers = \$240 for labor + \$50 foam (Total **\$170/ac**)

ATV work:

³ Decrease Roundup rate to 3% - \$45/gal x 2.4gal = \$108 for Roundup per 1.5ac (Total

\$557/ac)